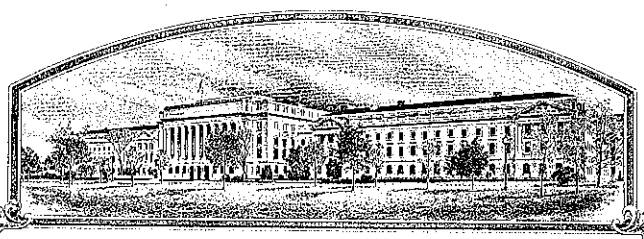

No. 9300151

THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

Asgrow Seed Co.

Whereas, THERE HAS BEEN PRESENTED TO THE

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED DISTINCT VARIETY OF SEXUALLY REPRODUCED, OR TUBER PROPAGATED, PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF TWENTY YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, OR IMPORTING IT, OR EXPORTING IT, OR CONDITIONING IT FOR PROPAGATION, OR STOCKING IT FOR ANY OF THE ABOVE PURPOSES, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT. (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

SOYBEAN

'A4138'

In Testimony Whereof, I have hereunto set my hand and caused the seal of the Plant Variety Protection Office to be affixed at the City of Washington, D.C. this thirtieth day of September in the year of our Lord one thousand nine hundred and ninety-six.

Attest:

Martha A. Stanton
Commissioner
Plant Variety Protection Office
Agricultural Marketing Service

Secretary of Agriculture

FORM APPROVED: OMB 0581-0055, Expires 1/31/91

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

(Instructions on reverse)

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

1. NAME OF APPLICANT(S) *(as it is to appear on the Certificate)*
Asgrow Seed Co.

2. TEMPORARY DESIGNATION OR EXPERIMENTAL NO.
XP4238

3. VARIETY NAME
A4138

4. ADDRESS *(street and no. or R.F.D. no., city, state, and ZIP)*
Asgrow Seed Co.
7000 Portage Road
9638-190-23
Kalamazoo, MI 49001

5. PHONE *(Include area code)*
1-616-384-2351

FOR OFFICIAL USE ONLY

PVPO NUMBER
9300151

FILING
Date: Mar. 2, 1993
Time: ☐ A.M. ☐ P.M.

FEES RECEIVED
Filing and Examination Fee: $2150. ~~175~~
Date: 3/1/93, 3/30/93
Certificate Fee: $300.00
Date: Aug. 20, 1996

6. GENUS AND SPECIES NAME
Glycine max

7. FAMILY NAME *(Botanical)*
Leguminosae

8. CROP KIND NAME *(Common Name)*
Soybean

9. DATE OF DETERMINATION

10. IF THE APPLICANT NAMED IS NOT A "PERSON," GIVE FORM OF ORGANIZATION *(Corporation, partnership, association, etc.)*
Corporation

11. IF INCORPORATED, GIVE STATE OF INCORPORATION
Deleware

12. DATE OF INCORPORATION
March 22. 1968

13. NAME AND ADDRESS OF APPLICANT REPRESENTATIVE(S), IF ANY, TO SERVE IN THIS APPLICATION AND RECEIVE ALL PAPERS
Wayne Hoener
Asgrow Seed Co.
7000 Portage Road
9638-190-23 Kalamazoo, MI 49001

PHONE *(Include area code)*:

14. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED *(Follow INSTRUCTIONS on reverse)*

a. [X] Exhibit A, Origin and Breeding History of the Variety.
b. [X] Exhibit B, Novelty Statement.
c. [X] Exhibit C, Objective Description of Variety.
d. [X] Exhibit D, Additional Description of Variety.
e. [X] Exhibit E, Statement of the Basis of Applicant's Ownership.
f. [X] Seed Sample (2,500 viable untreated seeds). Date Seed Sample mailed to Plant Variety Protection Office _____.
g. [X] Filing and Examination Fee ($2,150) made payable to "Treasurer of the United States."

15. DOES THE APPLICANT(S) SPECIFY THAT SEED OF THIS VARIETY BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED? *(See section 83(a) of the Plant Variety Protection Act.)*
☐ YES *(If "YES," answer items 16 and 17 below)* ☒ NO *(If "NO," skip to item 18 below)*

16. DOES THE APPLICANT(S) SPECIFY THAT THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS?
☐ YES ☐ NO

17. IF "YES" TO ITEM 16, WHICH CLASSES OF PRODUCTION BEYOND BREEDER SEED?
☐ FOUNDATION ☐ REGISTERED ☐ CERTIFIED

18. DID THE APPLICANT(S) PREVIOUSLY FILE FOR PROTECTION OF THE VARIETY IN THE U.S.?
☐ YES *(If "YES," through* ☐ Plant Variety Protection Act ☐ Patent Act. Give date: _____.)
☒ NO

19. HAS THE VARIETY BEEN RELEASED, USED, OFFERED FOR SALE, OR MARKETED IN THE U.S. OR OTHER COUNTRIES?
☐ YES (If "YES," give names of countries and dates)
☒ NO

20. The applicant(s) declare(s) that a viable sample of basic seeds of this variety will be furnished with the application and will be replenished upon request in accordance with such regulations as may be applicable.

The undersigned applicant(s) is (are) the owner(s) of this sexually reproduced novel plant variety, and believe(s) that the variety is distinct, uniform, and stable as required in section 41, and is entitled to protection under the provisions of section 42 of the Plant Variety Protection Act.

Applicant(s) is (are) informed that false representation herein can jeopardize protection and result in penalties.

SIGNATURE OF APPLICANT *(Owner(s))*	CAPACITY OR TITLE	DATE
Wayne D. Hoener	Soybean Prod. Mgr.	2-18-93
SIGNATURE OF APPLICANT *(Owner(s))*	CAPACITY OR TITLE	DATE

Asgrow Seed Company
PVP Application A4138 Soybean
January 30, 1993

9300151

EXHIBIT A

Origin and Breeding History of A4138

1985 - Cross was made at Isabela, Puerto Rico.

PARENTS: A4595 * A4009

1985-86 - F1,F2 and F3 generations grown at Isabela, Puerto Rico.

1986 - F4 generation grown at Stonington, Illinois. Several hundred plants were selected from the bulk population and threshed individually. Seeds from individual plants were screened in the greenhouse at Stonington, Illinois for resistance to race 3 of the soybean cyst nematode.

1987 - Progeny row IP85125-I87-23516 was selected for its appearance, standability and cyst nematode resistance at Stonington, Illinois. This row was harvested in bulk and seeds were checked and verified for uniform seed coat luster, hilum color and SCN resistance to race 3.

It was October 1987, that IP85125-I87-23516 was determined to be a stable and unique line.

1988 - IP85125-I87-23516 was entered in the preliminary P414 yield test (entry 04) which was grown at Stonington, Illinois and Queenstown, Maryland. It produced uniform stands and was selected for its high yield, good plant health and soybean cyst nematode resistance.

IP85125-I87-23516 was tested for soybean cyst nematode resistance during the winter of 1988-89 and found to be resistant to race 3.

1989 - Because of its good yield potential, IP85125-I87-23516 was put into the N403 (entry 38), an advanced yield trial for cyst resistant lines grown at nine non-cyst locations and three cyst-infested locations including the states of Maryland, Indiana, Illinois, Missouri and Kentucky. Because of its high yield and SCN resistance, it was selected and given the experimental designation X3938.

continued ...

Exhibit A (A4138) continued.....

1989 - X3938 was tested for phytopthora root rot resistance in the greenhouse and found to be susceptible. X3938 was checked to both race 3 and race 14 of the soybean cyst nematode by Asgrow personnel and found to be resistant to race 3 and to have moderate resistance to race 14. X3938 was also found to have resistance to the brown stem rot organism in the field.

1990 - X3938 was grown in three different advanced trials during 1990 at twenty locations across the midwest and east coast and again yielded very well.

X3938 was selected for its yield, standability, SCN resistance and brown stem rot tolerance. X3938 was renamed XP4238 since it was determined in 1990 that X3938 was an early group IV cultivar.

XP4238 was again tested for phytopthora root rot resistance in the greenhouse and found to be susceptible. XP4238 was rechecked to both race 3 and race 14 of the soybean cyst nematode by Asgrow and University personnel and found to be resistant to race 3 and to have moderate resistance to race 14.

- Breeder seed of XP4238 was produced at Stonington, Illinois during the summer of 1990. Fifty pounds of breeder seed of XP4238 was sent to Puerto Rico in December, 1990-1991 for an additional increase of seed stock.

1991 - XP4238 was entered in six advanced yield trials which were grown at 22 locations across the midwest and east coast including the states of Iowa, Illinois, Indiana, Kansas, Maryland, Missouri, Kentucky and Ohio.

- XP4238 was again found to have resistance to the brown stem rot organism by university personnel in the lab.

- XP4238 again yielded well and was nominated for release and full production and assigned the designation A4138.

- Foundation seed of A4138 was produced at Stonington, Illinois while the basic seed stock was produced at Perry, Iowa.

A4138 is uniform and stable within commercially acceptable limits based on trial observations since its development in 1987. As with other soybean varieties, variants can occur for almost any characteristic during the course of repeated sexual reproduction.

Asgrow Seed Company
PVP Application A4138 Soybean
January 30, 1993

EXHIBIT B

Novelty Statement concerning A4138 Soybean

To our knowledge the soybean varieties that most closely resemble A4138 are A3935, A4009, A4393, A4715 and Pioneer P9443. Characteristics which differentiate A4138 include, but are not necessarily restricted to the following:

Variety	1. Flower Color	2. Pubescence Color	3. Hilum Color	4. Pod Wall Color	5. SCN	6. Peroxidase
A4138	White	Tawny	Black	Tan	3	High
A3935	White	Tawny	Black	Brown *	None *	High
A4009	White	Tawny	Black	Tan	3,14 *	High
A4393	Purple *	Tawny	Black	Tan	None *	Low *
A4715	White	Tawny	Black	Tan	3,14 *	High
Pion 9443	White	Tawny	Black	Tan	3,14 *	----

Variety	7. Maturity	8. Lodging	9. Height	10. % Protein	11. % Oil	12. Yield Bu/Ac. A4138	Other
A4138	0	2.8	38"	42.7	20.2	----	----
A3935	-1.3	2.0 *	36"	42.2	20.3	60.5	59.6 (56 Loc.)
A4009	-1.5	2.2 *	37"	42.5	20.4	60.7	56.0 (47 Loc.)
A4393	+1.6	2.0 *	39"	43.1	20.0	60.8	58.4 (40 Loc.)
A4715	+5.4 *	1.7 *	37"	42.0	20.5	----	----
Pion 9443	-1.1	2.4	34"	----	----	62.3	56.8 (12 Loc.)
# Locations	47	47	47	4	4		

5.) Resistant to these races of Heterodera glycines Ichinohe, (soybean cyst nematode) (**note; race 14 was formerly race 4.)

7.) Days earlier (-) or later (+) than A4138.

8.) Lodging 1-5 : (1= No Lodging, 5= All plants flat)

9.) Height in inches.

12.) Yield in Bushels per Acre.

FORM APPROVED: OMB NO. 0581-0055

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
LIVESTOCK, MEAT, GRAIN & SEED DIVISION
PLANT VARIETY PROTECTION OFFICE
BELTSVILLE, MARYLAND 20705

EXHIBIT C
(Soybean)

OBJECTIVE DESCRIPTION OF VARIETY
SOYBEAN (Glycine max L.*)*

NAME OF APPLICANT(S)	TEMPORARY DESIGNATION	VARIETY NAME
Asgrow Seed Company	XP4238	A4138

ADDRESS *(Street and No., or R.F.D. No., City, State, and Zip Code)*
7000 Portage Road
9638-190-23
Kalamazoo, MI 49001

FOR OFFICIAL USE ONLY
PVPO NUMBER
9300151

Choose the appropriate response which characterizes the variety in the features described below. When the number of significant digits in your answer is fewer than the number of boxes provided, place a zero in the first box when number is 9 or less (e.g., [0][9]). Starred characters ★ are considered fundamental to an adequate soybean variety description. Other characters should be described when information is available.

1. SEED SHAPE:

[2]

1 = Spherical (L/W, L/T, and T/W ratios = < 1.2)
2 = Spherical Flattened (L/W ratio > 1.2; L/T ratio = < 1.2)
3 = Elongate (L/T ratio > 1.2; T/W = < 1.2)
4 = Elongate Flattened (L/T ratio > 1.2; T/W > 1.2)

★ **2. SEED COAT COLOR: (Mature Seed)**

[1] 1 = Yellow 2 = Green 3 = Brown 4 = Black 5 = Other *(Specify)* _____

3. SEED COAT LUSTER: (Mature Hand Shelled Seed)

[1] 1 = Dull ('Corsoy 79'; 'Braxton') 2 = Shiny ('Nebsoy'; 'Gasoy 17')

★ **4. SEED SIZE: (Mature Seed)**

[1][7] Grams per 100 seeds

★ **5. HILUM COLOR: (Mature Seed)**

[6] 1 = Buff 2 = Yellow 3 = Brown 4 = Gray 5 = Imperfect Black 6 = Black 7 = Other *(Specify)* _____

★ **6. COTYLEDON COLOR: (Mature Seed)**

[1] 1 = Yellow 2 = Green

★ **7. SEED PROTEIN PEROXIDASE ACTIVITY:**

[2] 1 = Low 2 = High

★ **8. SEED PROTEIN ELECTROPHORETIC BAND:**

[2] 1 = Type A ($SP1^a$) 2 = Type B ($SP1^b$)

★ **9. HYPOCOTYL COLOR:**

[1] 1 = Green only ('Evans'; 'Davis') 2 = Green with bronze band below cotyledons ('Woodworth'; 'Tracy')
3 = Light Purple below cotyledons ('Beeson'; 'Pickett 71')
4 = Dark Purple extending to unifoliate leaves ('Hodgson'; 'Coker Hampton 266A')

★ **10. LEAFLET SHAPE:**

[3] 1 = Lanceolate 2 = Oval 3 = Ovate 4 = Other *(Specify)* _____

11. LEAFLET SIZE:

[2] 1 = Small ('Amsoy 71'; 'A5312') 2 = Medium ('Corsoy 79'; 'Gasoy 17')
3 = Large ('Crawford'; 'Tracy')

12. LEAF COLOR:

[2] 1 = Light Green ('Weber'; 'York') 2 = Medium Green ('Corsoy 79'; 'Braxton')
3 = Dark Green ('Gnome'; 'Tracy')

★ **13. FLOWER COLOR:**

[1] 1 = White 2 = Purple 3 = White with purple throat

★ **14. POD COLOR:**

[1] 1 = Tan 2 = Brown 3 = Black

★ **15. PLANT PUBESCENCE COLOR:**

[2] 1 = Gray 2 = Brown (Tawny)

16. PLANT TYPES:

[3] 1 = Slender ('Essex'; 'Amsoy 71') 2 = Intermediate ('Amcor'; 'Braxton')
3 = Bushy ('Gnome'; 'Govan')

★ **17. PLANT HABIT:**

[3] 1 = Determinate ('Gnome'; 'Braxton') 2 = Semi-Determinate ('Will')
3 = Indeterminate ('Nebsoy'; 'Improved Pelican')

★ **18. MATURITY GROUP:**

[0][7] 1 = 000 2 = 00 3 = 0 4 = I 5 = II 6 = III 7 = IV 8 = V
9 = VI 10 = VII 11 = VIII 12 = IX 13 = X

★ **19. DISEASE REACTION: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant)**

BACTERIAL DISEASES:

★ [0] Bacterial Pustule *(Xanthomonas phaseoli* var. *sojensis)*

★ [0] Bacterial Blight *(Pseudomonas glycinea)*

★ [0] Wildfire *(Pseudomonas tabaci)*

FUNGAL DISEASES:

★ [0] Brown Spot *(Septoria glycines)*

Frogeye Leaf Spot *(Cercospora sojina)*

★ [0] Race 1 [ ] Race 2 [ ] Race 3 [ ] Race 4 [ ] Race 5 [ ] Other *(Specify)* _____

[0] Target Spot *(Corynespora cassiicola)*

[0] Downy Mildew *(Peronospora trifoliorum* var. *manshurica)*

[0] Powdery Mildew *(Microsphaera diffusa)*

★ [2] Brown Stem Rot *(Cephalosporium gregatum)*

[0] Stem Canker *(Diaporthe phaseolorum* var. *caulivora)*

19. DISEASE REACTION: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant) (Continued)

FUNGAL DISEASES: (Continued)

★ [0] Pod and Stem Blight *(Diaporthe phaseolorum* var; *sojae)*

[0] Purple Seed Stain *(Cercospora kikuchii)*

[0] Rhizoctonia Root Rot *(Rhizoctonia solani)*

Phytophthora Rot *(Phytophthora megasperma* var. *sojae)*

★ [1] Race 1 [1] Race 2 [1] Race 3 [1] Race 4 [1] Race 5 [0] Race 6 [1] Race 7

[1] Race 8 [0] Race 9 [ ] Other *(Specify)* rps

VIRAL DISEASES:

[0] Bud Blight (Tobacco Ringspot Virus)

[0] Yellow Mosaic (Bean Yellow Mosaic Virus)

★ [0] Cowpea Mosaic (Cowpea Chlorotic Virus)

[0] Pod Mottle (Bean Pod Mottle Virus)

★ [0] Seed Mottle (Soybean Mosaic Virus)

NEMATODE DISEASES:

Soybean Cyst Nematode *(Heterodera glycines)*

★ [0] Race 1 [0] Race 2 [2] Race 3 [0] Race 4 [1] Other *(Specify)* Race 14, Moderately Susc.

[0] Lance Nematode *(Hoplolaimus Colombus)*

★ [0] Southern Root Knot Nematode *(Meloidogyne incognita)*

★ [0] Northern Root Knot Nematode *(Meloidogyne Hapla)*

[0] Peanut Root Knot Nematode *(Meloidogyne arenaria)*

[0] Reniform Nematode *(Rotylenchulus reniformis)*

[ ] OTHER DISEASE NOT ON FORM *(Specify):* _____

20. PHYSIOLOGICAL RESPONSES: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant)

★ [1] Iron Chlorosis on Calcareous Soil

[ ] Other *(Specify)* _____

21. INSECT REACTION: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant)

[0] Mexican Bean Beetle *(Epilachna varivestis)*

[0] Potato Leaf Hopper *(Empoasca fabae)*

[ ] Other *(Specify)* _____

22. INDICATE WHICH VARIETY MOST CLOSELY RESEMBLES THAT SUBMITTED.

CHARACTER	NAME OF VARIETY	CHARACTER	NAME OF VARIETY
Plant Shape	A4595	Seed Coat Luster	A4009
Leaf Shape	A4595	Seed Size	A4009
Leaf Color	A4009	Seed Shape	A4009
Leaf Size	A4009	Seedling Pigmentation	A4009

23. GIVE DATA FOR SUBMITTED AND SIMILAR STANDARD VARIETY: Paired Comparison Data

VARIETY	NO. OF DAYS MATURITY	PLANT LODGING SCORE	CM PLANT HEIGHT	LEAFLET SIZE		SEED CONTENT		SEED SIZE G/100 SEEDS	NO. SEEDS/ POD
				CM Width	CM Length	% Protein	% Oil		
A4138 Submitted	145	2.8	97			42.7	20.2	17.4	3
A4009 Name of Similar Variety	143	2.2	94			42.5	20.4	16.2	3

PUBLICATIONS USEFUL AS REFERENCE AIDS FOR COMPLETING THIS FORM:

1. Caldwell, B.E., ed. 1973. Soybeans: Improvement, Production, and Uses. Amer. Soc. Agron. Monograph No. 16.

2. Buttery, B.R. and R.I. Buzzell. 1968. Peroxidase activity in seeds of soybean varieties. Crop Sci., 8: 722-725.

3. Hymowitz, T. 1973. Electrophoretic analysis of SBTI-A_2 in the USDA soybean germplasm collection. Crop Sci., 13: 420-421.

4. Payne, R.C. and L.F. Morris. 1976. Differentiation of soybean cultivars by seedling pigmentation patterns. J. Seed Technol. 1: 1-19.

Asgrow Seed Company
PVP Application A4138 Soybean
January 30, 1993

EXHIBIT D

Additional Description of the Variety

A4138 is an early Maturity Group IV cultivar that possesses superior and consistent yields relative to other varieties of similar maturity. A4138 combines this high yield potential with resistance to race 3 of the soybean cyst nematode. A4138 has also shown resistance to the brown stem rot organism.

Asgrow Seed Company
PVP Application A4138 Soybean
January 30, 1993

EXHIBIT E

Statement of the Basis of Applicant's Ownership

A4138 was originated and developed by Dale Weigelt, an Asgrow Plant Breeder. By agreement between employee and Asgrow Seed Company, all rights to any invention, discovery, or development made by an employee are assigned to the Company. No rights to such invention, discovery, or development are retained by the employee.